APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/128,394	08/03/1998	CURT D. TUDOR	RATLP007	2723

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EXAMINER
ZHEN, LI B

ART UNIT	PAPER NUMBER
2126	

DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)	
Office Action Summary	09/128,394	TUDOR, CURT D.	
	Examiner	Art Unit	
	Li B. Zhen	2126	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _15 January 2003_ .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-30_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-30_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)		4)☐ Interview Summary (PTO-413) Paper No(s). _____ .	
2)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)		5)☐ Notice of Informal Patent Application (PTO-152)	
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .		6)☐ Other: .	

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1 – 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Patent No. 6,009,269 to Burrows in view of U.S. Patent No. 6,026,427 to

Nishihara.

As to claim 1, Burrows teaches (column 3, lines 43 – 53; column 6, lines 30 – 40)

determining unsynchronized access (concurrency error), receiving a request from a first

thread to access the resource that is available (a thread makes a call 221 to acquire an

associated lock, Fig. 2). As to the limitation suspending the first thread for accessing

the resource that is available, the examiner interprets the limitation as suspending a first

thread that is used for accessing the resource that is available. The first thread that is

used for accessing the resource that is available is suspended, but the claim doesn't

bring out why the thread is suspended. Therefore the thread can be suspended for

other reasons, such as a condition variable as taught by Nishihara.

Nishihara teaches (column 2, lines 9 – 25; column 3, lines 40 – 67; column 4,

lines 25 – 50; column 6, lines 22 – 60) associating a condition variable with a lock

(condition variables are always associated with a mutex), receiving a request from a first

thread to access the resource that is available (thread 2 acquires the "CondWaitTimed"

condition variable...in step S38, a lock is established, preventing other threads from

gaining access to the "CondWaitTimed" condition variable, Fig. 10C), suspending the

first thread for accessing the resource that is available (condition variables allow threads

to wait within a mutual exclusion...thread 2 will now wait on further processing until the

occurrence of a signal semaphore or a time-out, whichever is first), and while the first

thread is suspended (at time T2, thread 2 becomes waited...thread 2 acquires the wait

condition variable and waits on a signal semaphore or a time-out to wake up, Fig. 5),

receiving a request from a second thread to access the resource (at time T3, the thread

1 sends a signal semaphore that wakes up thread 2 and then thread 1 becomes waited,

Fig. 5).

It would have been obvious to apply the teaching of associating a condition

variable with a lock to suspend a thread until the occurrence of a signal semaphore or a

time-out as taught by Nishihara to the invention of Burrows because condition variables

allow threads to wait within a mutual exclusion and allow signals to be broadcasted

(column 2, lines 15 – 25).

As to claim 2, Burrows teaches (column 7, lines 10 – 15) write access.

As to claim 3, Burrows as modified teaches (column 4, lines 23 – 39 of Nishihara)

awakening the first thread (at time T3, the thread 1 sends a signal semaphore that

wakes up thread 2, Fig. 5).

As to claim 4, Burrows teaches (column 3, lines 10 – 17) logging (record 195,

Fig. 1) unsynchronized accesses.

As to claim 5, Burrows as modified teaches (column 4, lines 39 – 67 of Nishihara) the first thread is suspended for a predetermined time (thread 2 then waits on a wait semaphore signal or a time-out... at time T3, thread 2 is woken up by a time-out, Fig. 6).

As to claim 6, Burrows as modified teaches (column 4, lines 23 – 39 of Nishihara) the event (signal semaphore) awaken (wakes up) the first thread (at time T3, the thread 1 sends a signal semaphore that wakes up thread 2, Fig. 5).

As to claim 7, Burrows as modified teaches (column 4, lines 23 – 39 of Nishihara) the second thread (thread 1) sends the event (sends a signal semaphore) that awakens the first thread (at time T3, the thread 1 sends a signal semaphore that wakes up thread 2, Fig. 5).

As to claim 8, Burrows teaches (column 2, lines 20 – 29) the use of memory (system 190 includes a memory, Fig. 1).

As to claim 9, this is a product claim that corresponds to method claim 1; note the rejection of claim 1 above, which also meets the product claim.

As to claim 10, all of the listed storage mediums are well-known choices to store a computer program.

As to claims 11, 12 – 16, these are the same as claims 1 – 2, 3 – 7 except the resource is recited as a memory location; note the rejection of claims 1 – 7 above, which also meets this claims. Obviously the resources would be stored at a memory location.

As to claim 17, this is the same as claim 9 except the resource is recited as a memory location; note the rejection of claim 9 above, which also meets this claim. Obviously the resources would be stored at a memory location.

As to claim 18, this is the same as claim 10; note the rejection of claim 10 above, which also meets this claim.

As to claims 19, 20 – 22, these are the same as claims 11 – 13, 14 – 16; note the rejection of claims 11 – 16 above, which also meets these claims.

As to claim 23, this is a product claim that corresponds to method claim 19; note the rejection of claim 19 above, which also meets this claim.

As to claim 24, this is the same as claim 10; note the rejection of claim 10 above, which also meets this claim.

As to claim 25, this is the same as claim 19 with additional limitations. As to a second thread that writes data to the memory location, it would have been obvious that another thread can write data to the memory location since there is not mechanism for synchronizing the accesses to the memory location. As to modifying existing program, see the rejection to claims 26 – 28.

As to claim 29, this is a product claim that corresponds to method claim 25; note the rejection of claim 25 above, which also meets the product claim.

As to claims 26 – 28, this is the same as claims 20 – 22 with the addition of modifying existing program to include computer code. Burrows teaches (column 2, lines 42 – 67) modifying existing program to include computer code.

As to claim 30, this is the same as claim 10; note the rejection of claim 10 above, which also meets this claim.

Response to Arguments

3.   Applicant's representative submits (p. 7, lines 10 – 11) "a first thread is suspended after it requests access to a resource that is available" and amended the claims to recite "suspending a first thread for accessing the resource that is available." The examiner submits that the limitation "suspending a first thread for accessing the resource that is available" does not clearly bring out this cause-effect relationship should that it defines over the art of record. A reasonable interpretation of the limitation would be suspending a first thread that is used for accessing the resource that is available. The first thread that is used for accessing the resource that is available is suspended, but it doesn't recite why the thread is suspended. Therefore the thread can be suspended for other reasons, such as a condition variable as taught by Nishihara (see rejection).

In reality, the cause-effect relationship as disclosed in the specification (p. 11, lines 3 – 28) is that the first thread is suspended because it requested access to a resource that can have multiple unsynchronized accesses. A resource that can have multiple unsynchronized accesses is always available because there is no mechanism for synchronizing the accesses. Therefore, suspension of the first thread is the result of an attempt by the first thread to access a resource that doesn't have a mechanism for synchronizing accesses (steps 501, 503, and 505 of Fig. 6). The art of record does not

teach suspending a thread because it requested access to a resource that does not

have a mechanism for synchronizing thread accesses.

Conclusion

4.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

U.S. Patent No. 5,784,618 to Toutonghi teaches managing ownership of a

released synchronization mechanism.

U.S. Patent No. 5,632,032 to Ault teaches controlling execution of the threads of

a first application from a second application.

U.S. Patent No. 5,842,016 to Toutonghi teaches thread synchronization during

garbage collection using execution barriers.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Li B. Zhen whose telephone number is (703) 305-3406.

The examiner can normally be reached on Mon - Fri, 8am - 4:30pm.

The fax phone numbers for the organization where this application or proceeding

is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for
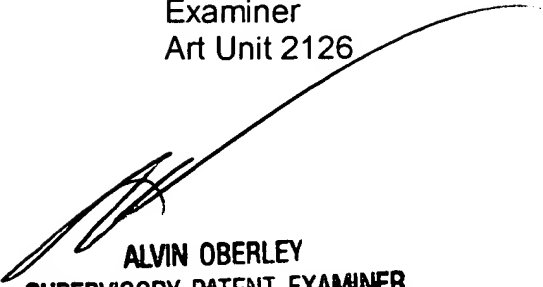
After Final communications.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

3900.

Li B. Zhen
Examiner
Art Unit 2126

lbz
March 21, 2003

ALVIN OBERLEY
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